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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/764,273	01/23/2004	Atsushi Itsuki	09852/0200822-US0	6185
7278	7590	12/19/2005	EXAMINER	
DARBY & DARBY P.C.			NAZARIO GONZALEZ, PORFIRIO	
P. O. BOX 5257			ART UNIT	
NEW YORK, NY 10150-5257			PAPER NUMBER	

1621

DATE MAILED: 12/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/764,273

Applicant(s)

ITSUKI, ATSUSHI

Examiner

Porfirio Nazario-Gonzalez

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 21-43 is/are rejected.
- 7) ☒ Claim(s) 4 and 6-20 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 5 and 37 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 5, the word "remoing" is incorrect. It appears that the word "removing" was intended. In claim 37, the end period for the claim is missing. Please correct.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-3 and 33-37 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by JP 2001-72687. The '687 JP patent application discloses a metal amide of the formula $M(N(C_mH_{2m+1})_2)_n$ wherein M is a metal, m is an integer of 1-4 and n is an integer of 3-5. Particularly disclosed are the compounds $Ti(N(Me)_2)_4$, $Ti(N(Et)_2)_4$ and $Zr(N(Et)_2)_4$. These metal amide compounds are claimed to have chlorine, hydrogen chloride, residual oxygen and water as

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impurities of 1 ppm or less. See paragraph [0016]. Further, the JP patent application discloses the use of said metal amides as precursors for metal nitride thin films. See Examples.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 21-32 and 38-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2001-72687 in view of Senzaki et al., Advanced Materials for Optics and Electronics, Vol. 10, No. 3-5, pp. 93-103 (2000), Chemical Abstracts No. 134:93473. The '687 JP patent application teaches a metal amide of the formula $M(N(C_mH_{2m+1})_2)_n$ wherein M is a metal, m is an integer of 1-4 and n is an integer of 3-5. Particularly disclosed are the compounds $Ti(N(Me)_2)_4$, $Ti(N(Et)_2)_4$ and $Zr(N(Et)_2)_4$. These metal amide compounds are claimed to have chlorine, hydrogen chloride, residual oxygen and water as impurities of 1 ppm or less. See paragraph [0016]. Further, the JP patent application teaches the use of said metal amides as precursors for metal nitride thin films. See Examples. The JP patent application differs from the instant claims in that the JP patent application does not use a solvent in the CVD process for making a thin film. The Senzaki et al. Chem. Abstracts discloses that it is conventional to dissolve metal-organic precursors in organic solvents for use as compositions for CVD processes. Therefore, one skilled in the art of Metallo-Organic Chemical Vapor Deposition (MOCVD) would utilize an organic solvent for dissolving a metal amide precursor as taught by the JP patent application

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since it is a conventional step in MOCVD and produced a metal nitride thin film from said composition.

Allowable Subject Matter

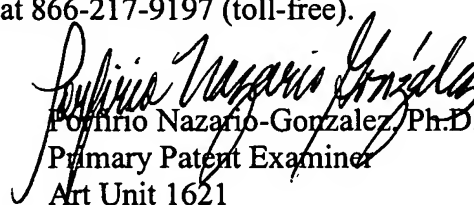
8. Claims 4 and 6-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art does not teaches an organometallic compound of the formula (1) where M is silicon having a chlorine content of 1 ppm or less and water content of 30 ppm or less. Further the synthesis method of an organometallic compound of claims 5-20 is not taught or disclosed by the prior art. It is particularly noted that there is no teaching or disclosure of using flash chromatography after a vacuum distillation step for an organometallic compound.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Porfirio Nazario-Gonzalez whose telephone number is 571-272-0641. The examiner can normally be reached on Mon.-Fri. (9:30 AM - 6:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann R. Richter can be reached on 571-272-0646. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Porfirio Nazario-Gonzalez, Ph.D.
Primary Patent Examiner
Art Unit 1621

PNG

December 11, 2005